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Nitta

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(54) **IMAGE PROCESSING APPARATUS**

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CPC ***H04N 1/00352*** (2013.01)

(58) **Field of Classification Search**
CPC H04N 21/4223; H04N 5/23206; H04N 21/4882; H04N 21/6582; H04N 2201/0094; H04N 5/23296; H04N 21/4126; H04N 2201/0081; H04N 7/147; G06F 3/017; G06F 3/011; G06F 9/45558; G06F 21/602; G06F 3/04
USPC 358/1.15, 1.14; 709/203, 202, 217; 382/103, 118; 707/736, 771, 781
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2001/0042681 A1* 11/2001 Yoon H01H 13/70 200/517
2003/0120369 A1* 6/2003 Takaoka G06Q 10/06 700/95
2007/0168413 A1* 7/2007 Barletta G06F 3/04883 709/203
2008/0239329 A1* 10/2008 Kitada H04N 1/00244 358/1.1
2010/0114951 A1* 5/2010 Bauman G06F 19/321 707/770
2010/0165083 A1* 7/2010 Sasaki G11B 20/10527 348/51
2011/0113097 A1* 5/2011 Takeuchi H04N 1/00183 709/204
2011/0125806 A1* 5/2011 Park G06F 21/6218 707/803
2012/0246114 A1* 9/2012 Edmiston G06T 11/60 707/625
2013/0038899 A1* 2/2013 Seikh G06F 3/1204 358/1.15
2014/0331164 A1* 11/2014 Enomoto H04N 1/00307 715/771
2015/0043021 A1* 2/2015 Ikeda H04N 1/32561 358/1.13

FOREIGN PATENT DOCUMENTS

JP 2005-074690 A 3/2005

* cited by examiner

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(57) **ABSTRACT**

An image processing apparatus includes a first storing part, a storage controlling part and a display controlling part. The storage controlling part stores, when a first remote operation device carries out an image output operation making the image processing apparatus process an output object image on a first process condition of the first remote operation device to create a first processed image and output the first processed image, the output object image in the first storing part with associating with the first process condition. The display controlling part processes, when a second remote operation device carries out a preview operation displaying the output object image stored in the first storing part, the output object image on a second process condition of the second remote operation device to create a second processed image and makes the second remote operation device display the second processed image on a displaying part.

5 Claims, 10 Drawing Sheets

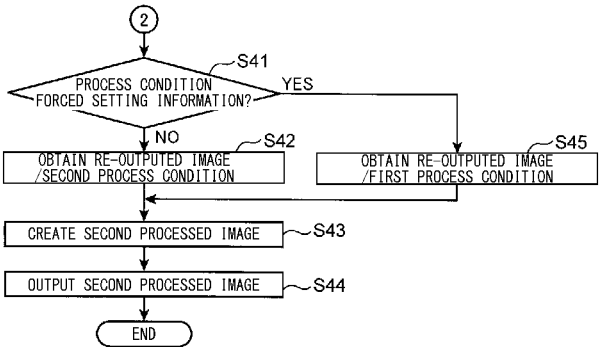

FIG. 1

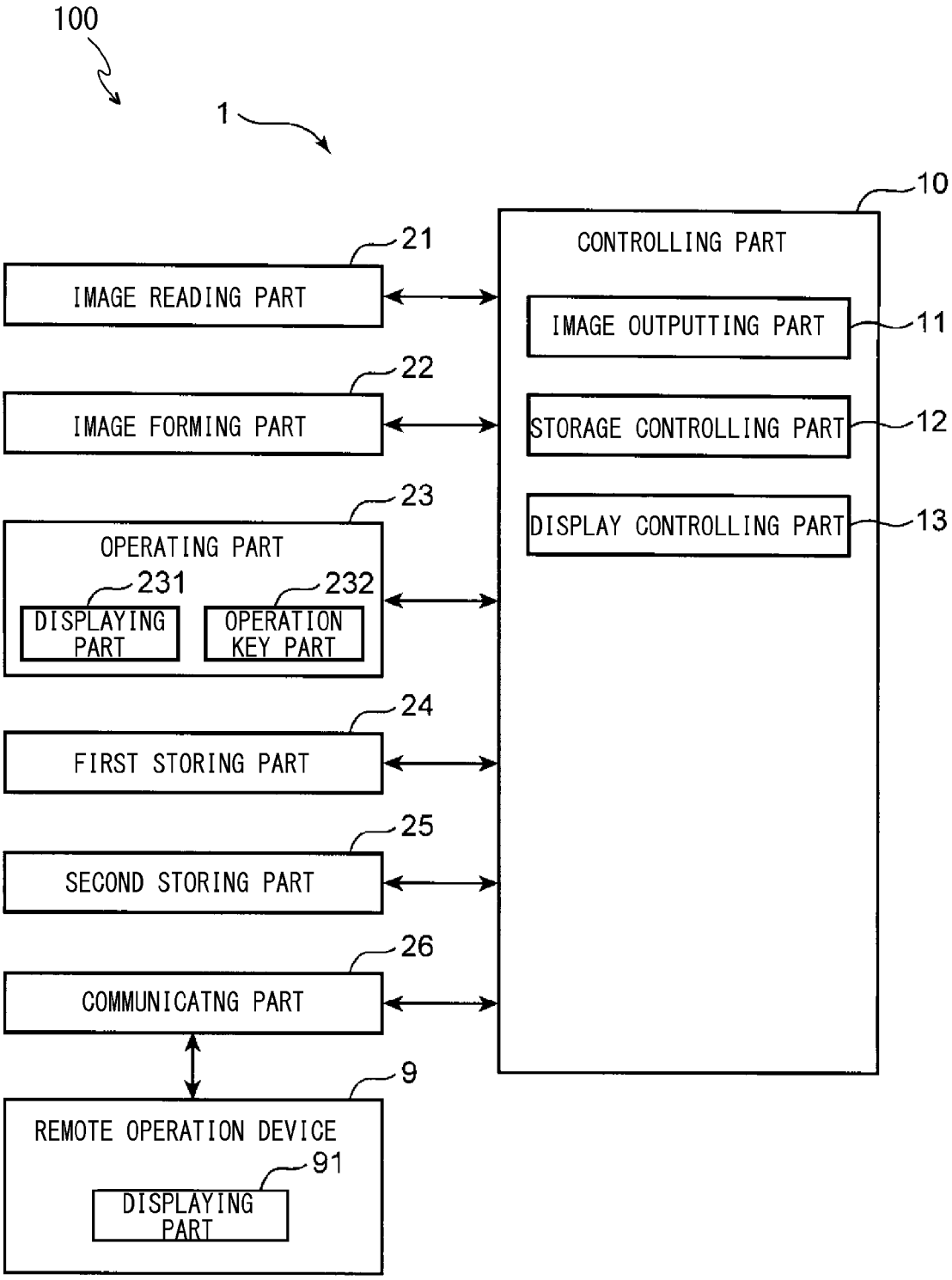
100
1
10
CONTROLLING PART
21
IMAGE READING PART
IMAGE OUTPUTTING PART
11
22
IMAGE FORMING PART
STORAGE CONTROLLING PART
12
23
OPERATING PART
DISPLAY CONTROLLING PART
13
231
232
DISPLAYING PART
OPERATION KEY PART
24
FIRST STORING PART
25
SECOND STORING PART
26
COMMUNICATNG PART
9
REMOTE OPERATION DEVICE
91
DISPLAYING PART

FIG. 2

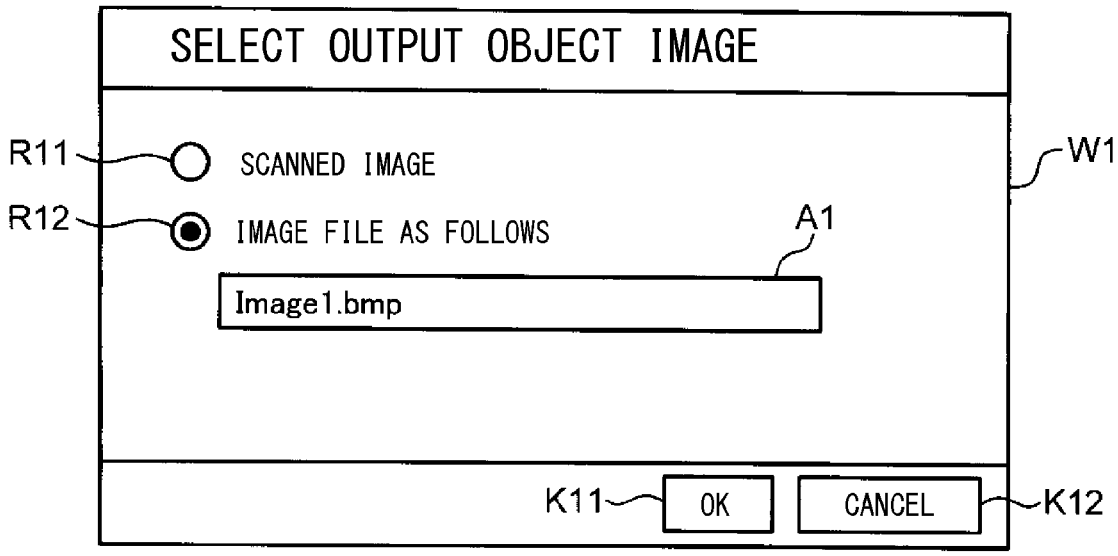
SELECT OUTPUT OBJECT IMAGE
R11
SCANNED IMAGE
R12
IMAGE FILE AS FOLLOWS
A1
Image1.bmp
W1
K11
OK
CANCEL
K12

FIG. 3

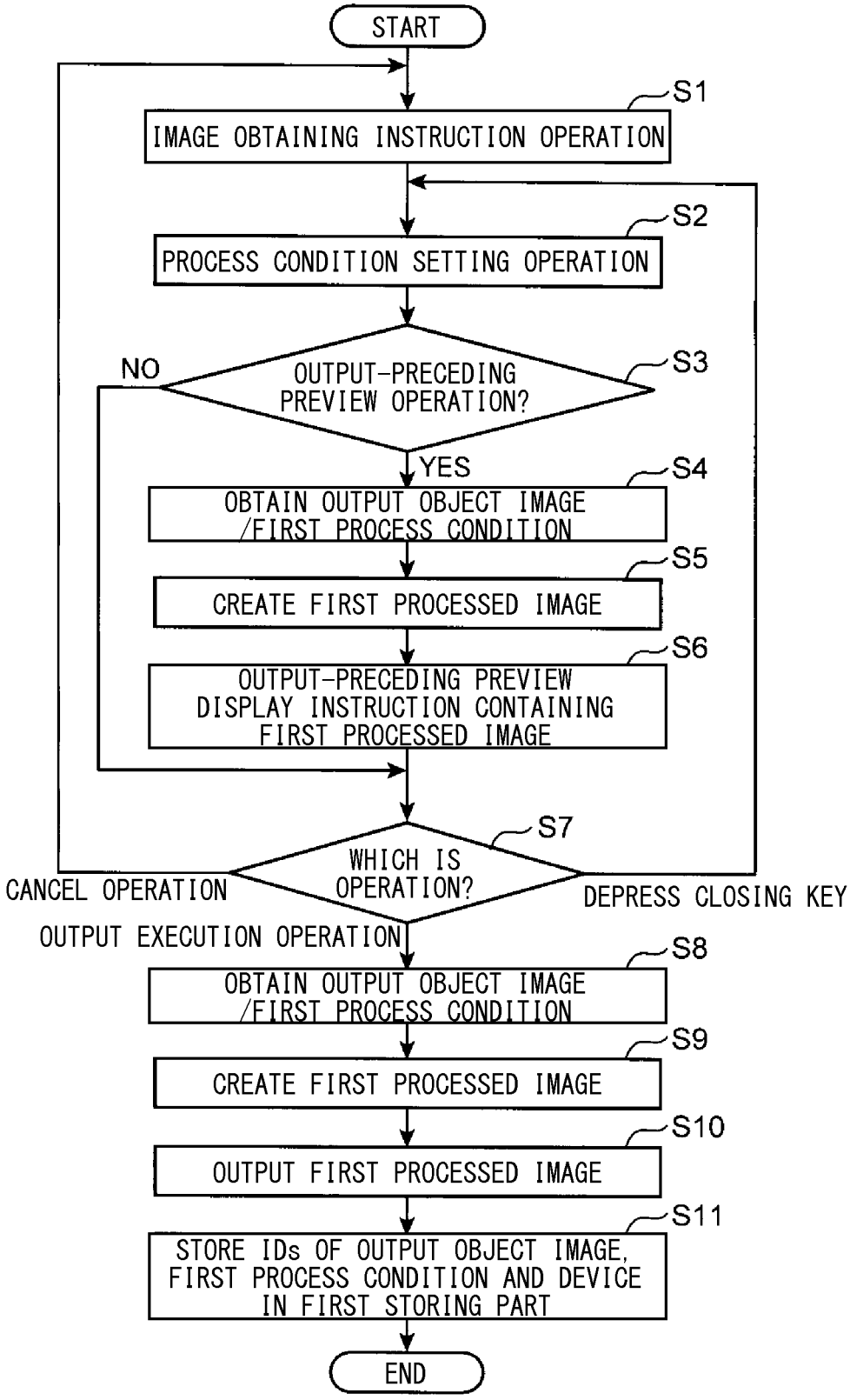
START
S1
IMAGE OBTAINING INSTRUCTION OPERATION
S2
PROCESS CONDITION SETTING OPERATION
S3
NO
OUTPUT-PRECEDING PREVIEW OPERATION?
YES
S4
OBTAIN OUTPUT OBJECT IMAGE /FIRST PROCESS CONDITION
S5
CREATE FIRST PROCESSED IMAGE
S6
OUTPUT-PRECEDING PREVIEW DISPLAY INSTRUCTION CONTAINING FIRST PROCESSED IMAGE
S7
WHICH IS OPERATION?
CANCEL OPERATION
DEPRESS CLOSING KEY
OUTPUT EXECUTION OPERATION
S8
OBTAIN OUTPUT OBJECT IMAGE /FIRST PROCESS CONDITION
S9
CREATE FIRST PROCESSED IMAGE
S10
OUTPUT FIRST PROCESSED IMAGE
S11
STORE IDs OF OUTPUT OBJECT IMAGE, FIRST PROCESS CONDITION AND DEVICE IN FIRST STORING PART
END

FIG. 4

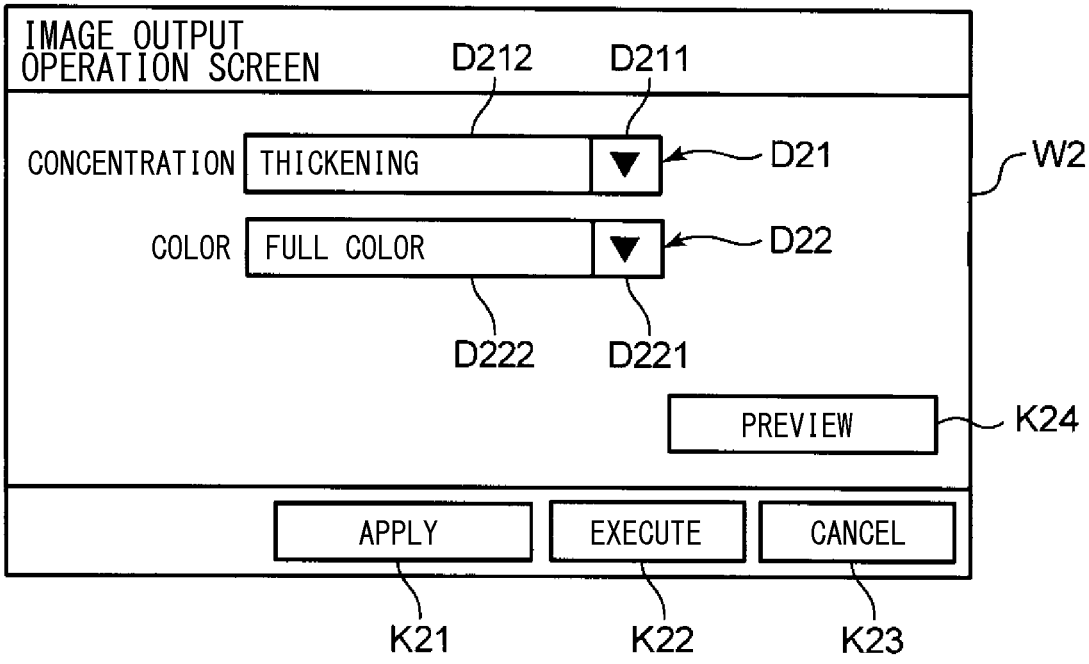
IMAGE OUTPUT
OPERATION SCREEN
D212
D211
CONCENTRATION
THICKENING
D21
W2
COLOR
FULL COLOR
D22
D222
D221
PREVIEW
K24
APPLY
EXECUTE
CANCEL
K21
K22
K23

FIG. 5

OUTPUT OBJECT IMAGE FILE NAME	IMAGE DATA OF OUTPUT OBJECT IMAGE	FIRST PROCESS CONDITION	ID OF REMOTE OPERATION DEVICE
Image1.bmp	BINARY DATA	THICKENING, FULL COLOR	xxx.xxx.xxx.xx1
Image2.bmp	BINARY DATA	NORMAL, FULL COLOR	xxx.xxx.xxx.xx2
Image3.bmp	BINARY DATA	THINNING, MONOCHROME	xxx.xxx.xxx.xx3
Image4.bmp	BINARY DATA	THICKENING, GRAY SCALE	xxx.xxx.xxx.xx4

FIG. 6

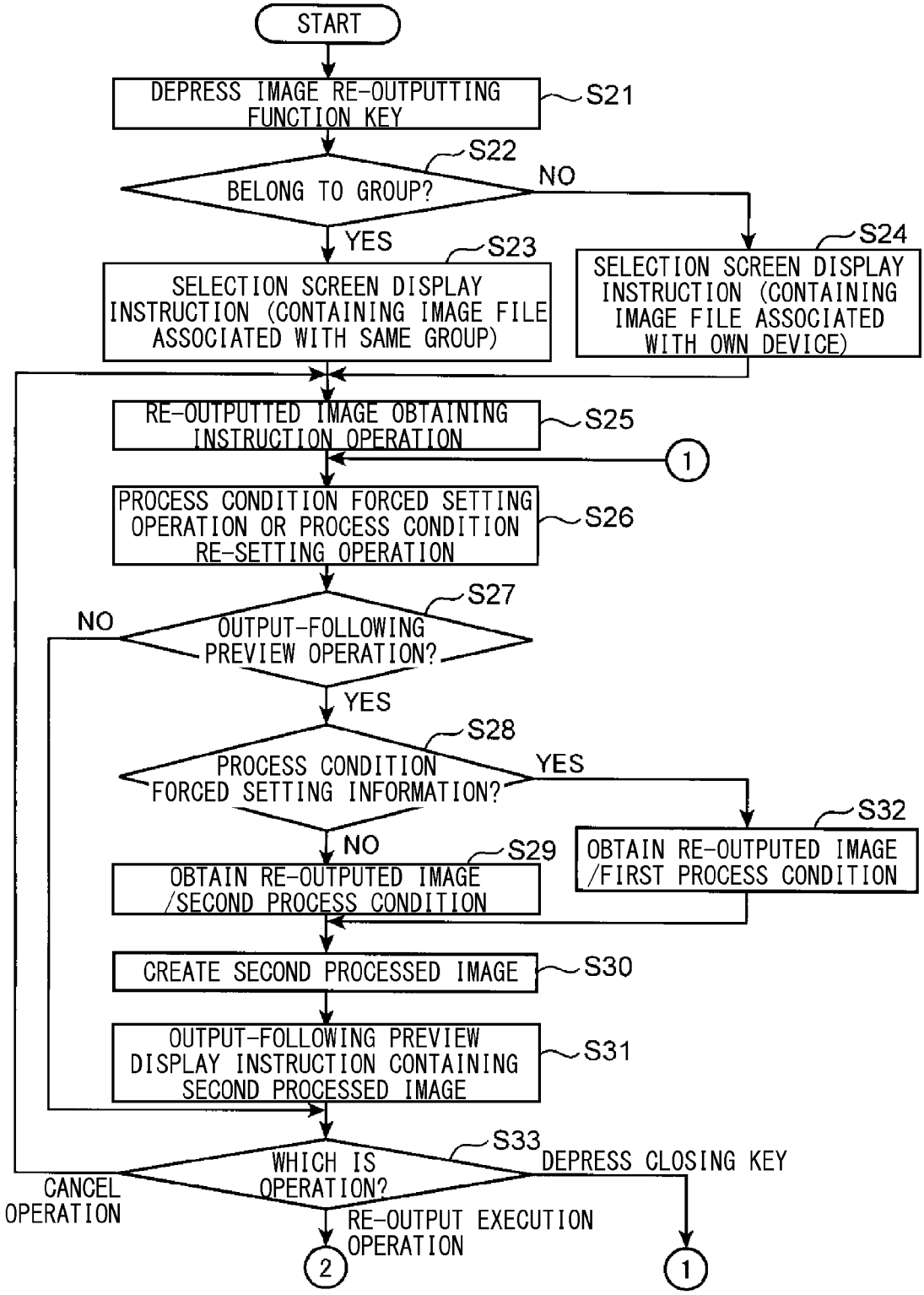
START
DEPRESS IMAGE RE-OUTPUTTING FUNCTION KEY
S21
S22
BELONG TO GROUP?
NO
YES
S23
SELECTION SCREEN DISPLAY INSTRUCTION (CONTAINING IMAGE FILE ASSOCIATED WITH SAME GROUP)
S24
SELECTION SCREEN DISPLAY INSTRUCTION (CONTAINING IMAGE FILE ASSOCIATED WITH OWN DEVICE)
RE-OUTPUTTED IMAGE OBTAINING INSTRUCTION OPERATION
S25
1
PROCESS CONDITION FORCED SETTING OPERATION OR PROCESS CONDITION RE-SETTING OPERATION
S26
S27
NO
OUTPUT-FOLLOWING PREVIEW OPERATION?
YES
S28
PROCESS CONDITION FORCED SETTING INFORMATION?
YES
S32
OBTAIN RE-OUTPUTED IMAGE /FIRST PROCESS CONDITION
NO
S29
OBTAIN RE-OUTPUTED IMAGE /SECOND PROCESS CONDITION
CREATE SECOND PROCESSED IMAGE
S30
OUTPUT-FOLLOWING PREVIEW DISPLAY INSTRUCTION CONTAINING SECOND PROCESSED IMAGE
S31
S33
WHICH IS OPERATION?
DEPRESS CLOSING KEY
CANCEL OPERATION
RE-OUTPUT EXECUTION OPERATION
2
1

FIG. 7

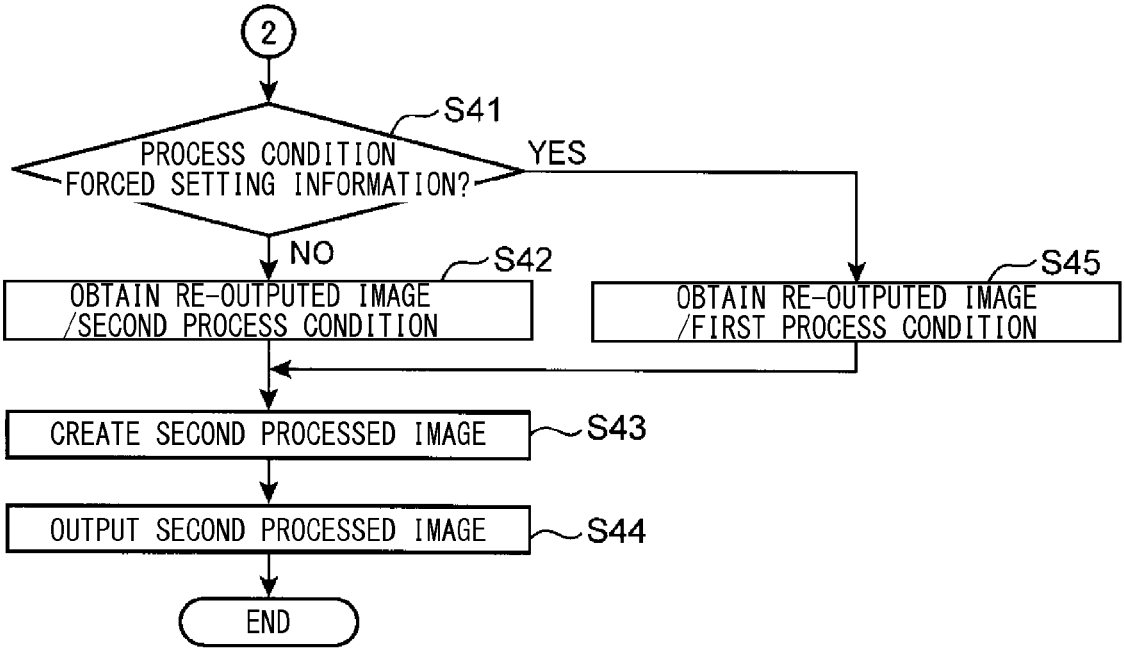
2
S41
PROCESS CONDITION FORCED SETTING INFORMATION?
YES
NO
S42
OBTAIN RE-OUTPUTED IMAGE /SECOND PROCESS CONDITION
S45
OBTAIN RE-OUTPUTED IMAGE /FIRST PROCESS CONDITION
CREATE SECOND PROCESSED IMAGE
S43
OUTPUT SECOND PROCESSED IMAGE
S44
END

FIG. 8

ID OF REMOTE OPERATION DEVICE	ID OF GROUP
xxx.xxx.xxx.xx1	G1
xxx.xxx.xxx.xx2	G1
xxx.xxx.xxx.xx3	G2

FIG. 9

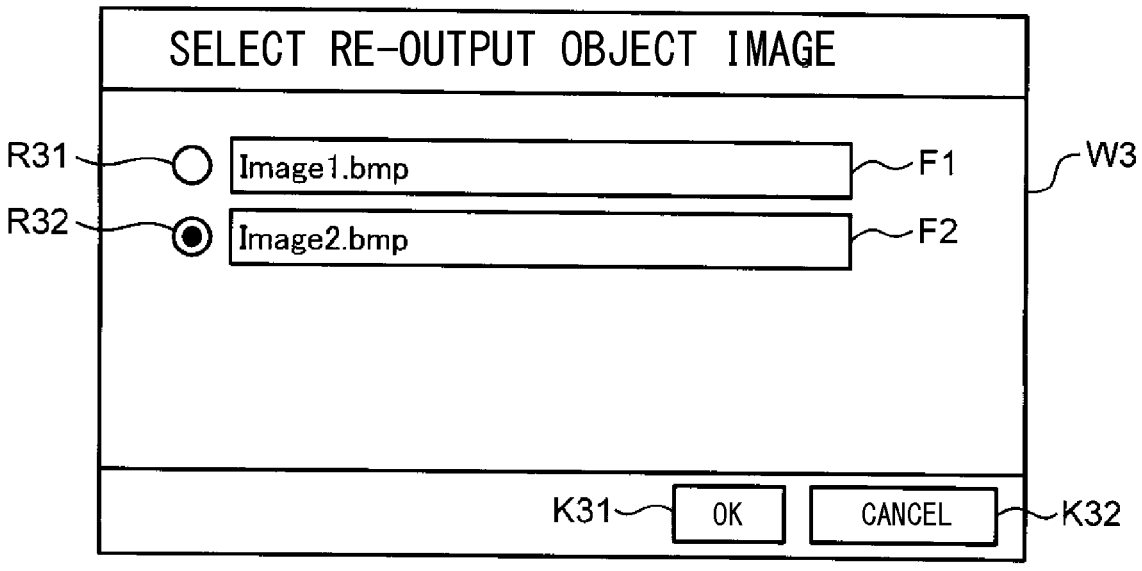
SELECT RE-OUTPUT OBJECT IMAGE
R31
Image1.bmp
F1
W3
R32
Image2.bmp
F2
K31
OK
CANCEL
K32

FIG. 10

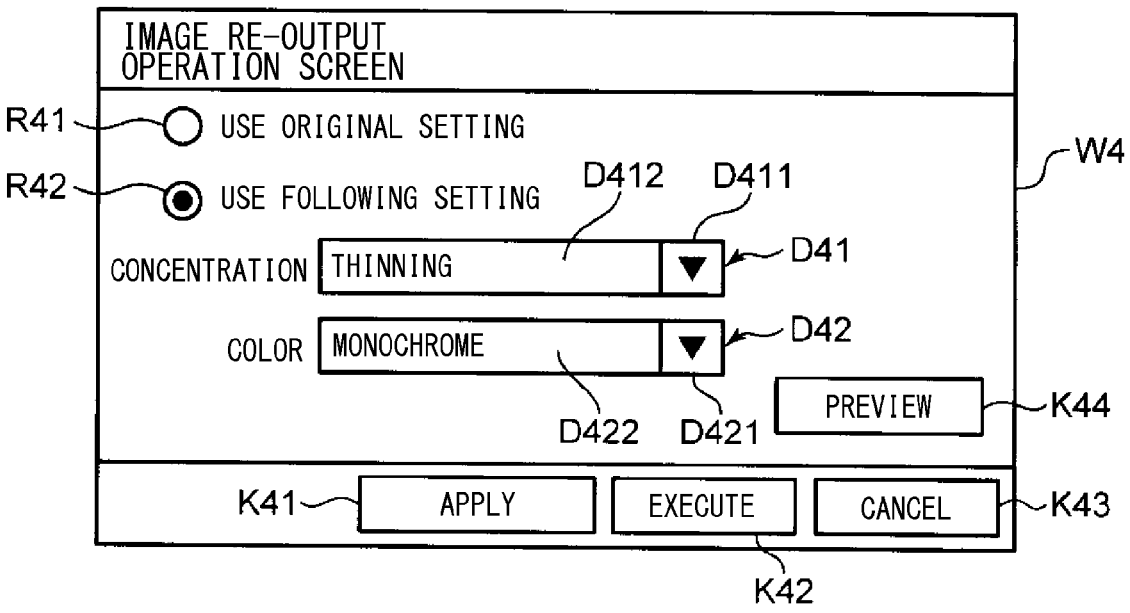
IMAGE RE-OUTPUT
OPERATION SCREEN
R41
USE ORIGINAL SETTING
R42
USE FOLLOWING SETTING
D412
D411
W4
CONCENTRATION
THINNING
D41
COLOR
MONOCHROME
D42
D422
D421
PREVIEW
K44
K41
APPLY
EXECUTE
CANCEL
K43
K42

IMAGE PROCESSING APPARATUS

INCORPORATION BY REFERENCE

This application is based on and claims the benefit of priority from Japanese Patent application No. 2014-152746 filed on Jul. 28, 2014, the entire contents of which are incorporated herein by reference.

BACKGROUND

The present disclosure relates to an image processing apparatus operated by a plurality of remote operation devices, particularly, a technique previewing processed image outputted in the past on the remote operation device.

Conventionally, an image processing apparatus, such as a multifunction peripheral, a printer and a scanner, operatable by using a remote operation device, such as a smart phone and a tablet terminal, is known. Concretely, in order to make the image processing apparatus output an image, e.g. print the image or create an electronic file of image data representing the image and output the electronic file, operation mentioned later is carried out in the remote operation device.

At first, operation making the image processing apparatus obtain an image of an output object (an output object image), such as operation instructing a scanner provided in the image processing apparatus to read image of a document or operation transmitting the image stored in the remote operation device to the image processing apparatus, is carried out. Subsequently, operation setting a process condition in processing the output object image, such as a condition whether concentration of the output object image is thickened or thinned or a condition whether the output object image is outputted in color or in monochrome, is carried out. Thereby, the image processing apparatus processes the output object image in the set process condition to create a processed image and outputs the processed image.

Moreover, for example, an image forming apparatus displaying selectably an image name applied to the image data outputted in the past and being capable of printing the image data corresponding to the selected image name and previewing the image represented by the image data corresponding to the selected image name is known.

An image processing apparatus using these conventional techniques is known to preview the processed image outputted in the past on the remote operation device and to re-print the processed image by operating the remote operation device after making a user of the remote operation device visually recognize the processed image.

However, the processed image previewed in the remote operation device by the image processing apparatus using the above-mentioned techniques is one processed image processed on one process condition set by one remote operation device of one user in the past. Therefore, another user of another remote operation device cannot visually recognize an image re-processed on another process condition different from the one process condition used when the one processed image is processed in the past. That is, another user of another remote operation device cannot re-process and re-use the one processed image outputted from the image processing apparatus by the one user of the one remote operation apparatus different from another remote operation device on another process condition set by another remote operation device.

SUMMARY

In accordance with one aspect of the present disclosure, an image processing apparatus operated by a plurality of remote operation devices includes a first storing part, a storage controlling part and a display controlling part. The storage controlling part is configured, when a first remote operation device out of the plurality of remote operation devices carries out an image output operation making the image processing apparatus process an output object image obtained in the image processing apparatus on a first process condition set by the first remote operation device to create a first processed image and output the first processed image, so as to store the output object image in the first storing part with associating with the first process condition. The display controlling part is configured, when a second remote operation device out of the plurality of remote operation devices carries out a preview operation displaying the output object image stored in the first storing part, so as to process the output object image on a second process condition set peculiar to the second remote operation device to create a second processed image and so as to make the second remote operation device display the second processed image on a displaying part of the second remote operation device.

The above and other objects, features, and advantages of the present disclosure will become more apparent from the following description when taken in conjunction with the accompanying drawings in which a preferred embodiment of the present disclosure is shown by way of illustrative example.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram showing an electrical structure of a multifunction peripheral according to an embodiment of an image processing apparatus in accordance with the present disclosure.

FIG. **2** is a plan view showing one example of an image obtaining instruction screen displayed on a remote operation device.

FIG. **3** is a flowchart useful for understanding action of the multifunction peripheral and the remote operation device when image output operation is carried out by the remote operation device.

FIG. **4** is a plan view showing one example of an image output operation screen displayed on the remote operation device.

FIG. **5** is a table showing one example of information stored in a first storing part of the multifunction peripheral.

FIG. **6** is a flowchart useful for understanding the first half of action of the multifunction peripheral and the remote operation device when image re-output operation is carried out by the remote operation device.

FIG. **7** is a flowchart useful for understanding the second half of action of the multifunction peripheral and the remote operation device when the image re-output operation is carried out by the remote operation device.

FIG. **8** is a table showing one example of information stored in a second storing part of the multifunction peripheral.

FIG. **9** is a plan view showing one example of a re-outputted image selection screen displayed on the remote operation device.

FIG. **10** is a plan view showing one example of an image re-output operation screen displayed on the remote operation device.

DETAILED DESCRIPTION

In the following, an embodiment of an image processing apparatus according to the present disclosure will be described with reference to the drawings. Incidentally, in the

embodiment, although the image processing apparatus is described with taking a multifunction peripheral as an example, the image processing apparatus is not restricted by this. The image processing apparatus may be, for example, a facsimile device, a copying machine, a scanner or a printer.

FIG. **1** is a block diagram showing an electrical structure of the multifunction peripheral **1** according to the embodiment of the image processing apparatus in accordance with the present disclosure. As shown in FIG. **1**, the multifunction peripheral **1** includes an image reading part **21**, an image forming part **22**, an operating part **23**, a first storing part **24**, a second storing part **25**, a communicating part **26** and a controlling part **10**. The multifunction peripheral **1** is configured so as to be remotely operated by a plurality of remote operation devices **9**, such as a smart phone and a tablet terminal.

That is, FIG. **1** shows a remote operation system **100** including one remote operation device **9** in the plurality of remote operation devices **9** and the multifunction peripheral **1** operated remotely by the remote operation device **9**.

The image reading part **21** includes an optical unit (not shown) having a CCD (Charged Coupled Device) line sensor and an exposure lump and others. The image reading part **21** is controlled by the controlling part **10** so as to make the optical unit read an image of a document, to create image data representing the image of the document and to output the image data to the controlling part **10**.

The image forming part **22** is controlled by the controlling part **10** so as to form a processed image created by the controlling part **10** onto a sheet. Incidentally, to the controlling part **10**, the image data created by the above-mentioned image reading part **21**, image data received from an external device by the communication part **26** as described later and others are inputted. Moreover, to the controlling part **10**, a process condition inputted by the operating part **23**, a process condition received from an external device by the communication part **26** as described later and others are inputted. The controlling part **10** processes the inputted image data on the inputted process condition to create the processed image.

Concretely, the image forming part **22** has a known structure including a photosensitive drum, a charging part, an exposing part, a developing part, a cleaning part and others. The charging part is arranged to face to a circumference face of the photosensitive drum. The exposing part is arranged to face to a circumference face of the photosensitive drum at a downstream side of the charging part. The developing part is arranged to face to a circumference face of the photosensitive drum at a downstream side of the exposing part. The cleaning part is arranged to face to a circumference face of the photosensitive drum at a downstream side of the developing part. Because image forming action forming the image on the sheet by the image forming part **22** is known, its description is omitted.

The operating part **23** includes a displaying part **231** displaying information and an operation key part **232** allowing a user to carry out various operation. The displaying part **231** is a liquid crystal display or the like having a touch panel function to display various information. The operation key part **232** includes various keys, for example, numeric keys for inputting numerical values and marks, cursor keys for moving a pointer (a cursor) displayed on the displaying part **231** and others.

The first storing part **24** and the second storing part **25** are storage devices, such as an HDD (Hard Disk Drive) or an SSD (Solid State Drive). The first storing part **24** is controlled by the controlling part **10** to store the image data. In the second storing part **25**, identification information identifying each remote operation device **9** and identification information identifying a group to which each remote operation device **9** belongs are stored with being associated with each other. The information stored in the first storing part **24** and the information stored in the second storing part **25** will be described later in detail.

The communicating part **26** is a communication interface circuit used for communication between the remote operation device **9** or an external device (not shown), such as a personal computer, and the controlling part **10** via a LAN (Local Area Network) or the like.

The controlling part **10** controls action of each component of the multifunction peripheral **1**. Concretely, the controlling part **10** includes a CPU (Central Processing Unit) (not shown) executing predetermined arithmetic processes, a nonvolatile memory (not shown), such as an EEPROM (Electrically Erasable Programmable Read Only Memory), storing predetermined control programs, a RAM (Random Access Memory) (not shown) storing temporarily data, their peripheral circuits and others.

The controlling part **10** works, for example, as an image outputting part **11**, a storage controlling part **12** and a display controlling part **13** by making the CPU execute the control program stored in the nonvolatile memory or the like. The image outputting part **11**, the storage controlling part **12** and the display controlling part **13** will be described later in detail.

The remote operation device **9** includes a displaying part **91** composed of a liquid crystal display or the like having a touch panel function. The remote operation device **9** displays an operation screen used for operating the multifunction peripheral **1**, a software keyboard used for inputting various information to the operation screen and others on the displaying part **91**. Moreover, the remote operation device **9** includes a storage (not shown), such as a nonvolatile memory (e.g. an EEPROM) and a RAM.

That is, a user of the remote operation device **9** touch-operates the operation screen displayed on the displaying part **91** to depress a key on the operation screen and to select a radio button on the operation screen. Moreover, the user of the remote operation device **9** touch-operates the software keyboard displayed on the displaying part **91** to input various information into input columns (a text box) on the operation screen. Thus, the user of the remote operation device **9** uses the operation screen displayed on the displaying part **91** to input a first execution instruction of a first function to be executed in the multifunction peripheral **1**.

The remote operation device **9** transmits the first execution instruction of the first function inputted by the user to the controlling part **10** via the communicating part **26**. The controlling part **10** executes the first function in accordance with the first execution instruction of the first function received from the remote operation device **9**. Thus, the remote operation device **9** remotely operates the multifunction peripheral **1** by transmitting the first execution instruction of the first function inputted by the user to the controlling part **10** via the communicating part **26**.

The controlling part **10** executes the first function, and then, replies a second execution instruction of a second function to be executed in the remote operation device **9** in accordance with executed result of the first function to the remote operation device **9** by using the communicating part **26**. The remote operation device **9** execute the second function in accordance with the second execution instruction of the second function replied from the multifunction peripheral **1**. Thus, the controlling part **10** makes the remote operation device **9** work in accordance with result of remote operation carried out by the remote operation device **9** by replying the second execution instruction of the second function to the

remote operation device **9** remotely operating the multifunction peripheral **1** by using the communicating part **26**.

In the following, an action of the multifunction peripheral **1** and the remote operation device **9** when image output operation is carried out in the remote operation device **9** will be described. The image output operation is operation making the multifunction peripheral **1** obtain the image of an output object (hereinafter, so-called as an output object image) and making the multifunction peripheral **1** process the obtained output object image on the process condition set by the remote operation device **9** to create the processed image and output the processed image. In this description, the image outputting part **11**, the storage controlling part **12** and the display controlling part **13** and information stored in the first storing part **24** will be described in detail.

Firstly, a case where the user of the remote operation device **9** (hereinafter, so-called as a remote user) touch-operates an icon displayed on the displaying part **91** for starting application software remotely operating the multifunction peripheral **1** may be considered. In such a case, the remote operation device **9** displays a menu screen on the displaying part **91**. On the menu screen, keys indicating names of various functions executable by the multifunction peripheral **1** are selectably listed and displayed.

Subsequently, if the remote user depresses the key indicating the name of the function outputting the image, such as a printing function and a transmitting function, the remote operation device **9** transmits the name of the touch-operated function to the controlling part **10** via the communicating part **26**, and then, displays an image obtaining instruction screen on the displaying part **91**. Incidentally, the controlling part **10** stores the name of the received function in the RAM.

The printing function is a function forming the image on the sheet by the image forming part **22** and outputting the sheet with the formed image. The transmitting function is a function creating an electronic file of the image data representing the image and transmitting the electronic file to directed destination.

The image obtaining instruction screen is an operation screen used for carrying out image obtaining instruction operation. The image obtaining instruction operation is operation inputting image obtaining instruction asking the multifunction peripheral **1** to obtain the output object image and transmitting the inputted image obtaining instruction to the controlling part **10** via the communicating part **26**.

FIG. **2** is a plan view showing one example of the image obtaining instruction screen W**1**. For example, as shown in FIG. **2**, on the image obtaining instruction screen W**1**, two radio buttons R**11** and R**12**, a file name input column (a text box) A**1** capable of input of an electronic file name, an OK key K**11** and a cancel key K**12** are arranged.

Two radio buttons R**11** and R**12** are arranged so that any one of the buttons is selectable. The radio button R**11** is arranged so as to be used for inputting a scanned image obtaining instruction. The radio button R**12** is arranged so as to be used for inputting a transmitting image obtaining instruction containing the image data composing the electronic file corresponding to the electronic file name inputted in the file name input column A**1**.

The OK key K**11** is arranged so as to conclusively establish inputs of indications according to operation of the radio button R**11** or the radio button R**12** and the file name input column A**1**. That is, when, by the remote user, the radio button R**11** is selected and the OK key K**11** is depressed, the input of the scanned image obtaining instruction is conclusively established. In such a case, the remote operation device **9** transmits the scanned image obtaining instruction to the controlling part **10** via the communicating part **26**.

On the other hand, when the radio button R**12** is selected, the remote operation device **9** displays the software keyboard on the displaying part **91**. Subsequently, the software keyboard may be touch-operated by the remote user so as to input the electronic file name into the file name input column A**1**, and then, the OK key K**11** may be depressed. Then, the input of the transmitting image obtaining instruction containing the image data represented by the electronic file of the electronic file name inputted in the file name input column A**1** is conclusively established. In such a case, the remote operation device **9** obtains the image data from the above-mentioned storage (not shown) and transmits the transmitting image obtaining instruction containing the obtained image data to the controlling part **10** via the communicating part **26**.

The cancel key K**12** is arranged so as to be used for carrying out cancel operation. The cancel operation is operation not displaying (hiding) the operation screen having been displayed on the displaying part **91** (a hided operation screen) and re-displaying a last operation screen having been displayed on the displaying part **91** before the hided operation screen. That is, when the cancel key K**12** is depressed, the remote operation device **9** does not display (hides) the image obtaining instruction screen W**1** and re-displays the menu screen on the displaying part **91**.

Thus, the image obtaining instruction operation is carried out by operation depressing the OK Key K**11** after selecting the radio button R**11** or operation inputting the electronic file name into the file name input column A**1** after selecting the radio button R**12**, and then, depressing the OK Key K**11**.

FIG. **3** is a flowchart useful for understanding action of the multifunction peripheral **1** and the remote operation device **9** when the image output operation is carried out by the remote operation device **9**. As shown in FIG. **3**, if the image obtaining instruction operation using the image obtaining instruction screen W**1** is carried out by the remote user (step S**1**), the remote operation device **9** transmits the scanned image obtaining instruction and the transmitting image obtaining instruction, and then, displays an image output operation screen on the displaying part **91**.

The image output operation screen is configured so as to be capable of output condition setting operation. The output condition setting operation is operation setting an output condition when outputting the output object image to the multifunction peripheral **1**. Concretely, the output condition contains a print condition used when outputting the output object image by the printing function, a transmission condition used when outputting the output object image by the transmitting function, the process condition used for processing the output object image when outputting the output object image by the printing function or the transmitting function and other conditions.

For example, the print condition contains a printing number condition designating the number of sheets of objects of image forming, a sheet size condition designating a size of the sheet and other conditions. The transmission condition contains a destination condition designating the destination of the outputted electronic file and other conditions. The process condition contains a concentration adjustment condition adjusting concentration of the image (e.g. "thickening", "normal", "thinning" and others), a color designation condition designating a color of the outputted image (e.g. "full color", "gray scale", "monochrome" and others) and other conditions.

In the following description, in order to simplify the description, a case where the process condition contains two

conditions of the concentration adjustment condition and the color designation condition may be considered. Moreover, in the following, in order to simplify the description, in the output condition setting operation using the image output operation screen, operation relating to process condition setting operation as operation setting the process condition will be described in detail.

FIG. **4** is a plan view showing one example of the image output operation screen W**2**. For example, as shown in FIG. **4**, in the image output operation screen W**2**, two dropdown lists D**21** and D**22**, an applying key K**21**, an executing key K**22**, a cancel key K**23** and a preview key K**24** are arranged.

The dropdown list D**21** is arranged so as to be used for setting the concentration adjustment condition. Concretely, if a right side key D**211** of the dropdown list D**21** is touch-operated, a plurality of candidate values (e.g. "thickening", "normal", "thinning" and others) settable as the concentration adjustment condition are displayed selectably. Subsequently, if any one of the displayed plurality of candidate values is selected, the selected candidate value is inputted into an input column D**212**. Thereby, the concentration adjustment condition is set to the selected candidate value. For example, in a concrete example shown in FIG. **4**, the concentration adjustment condition is set to a condition of "thickening".

Incidentally, just after the image obtaining instruction operation is carried out, when displaying the image output operation screen W**2** on the displaying part **91**, the remote operation device **9** inputs the concentration adjustment condition stored in the storage (not shown) of the remote operation device **9** into the input column D**212**. That is, at the beginning of displaying of the image output operation screen W**2**, the concentration adjustment condition is set to the preceding concentration adjustment condition stored in the storage (not shown).

The dropdown list D**22** is arranged so as to be used for setting the color designating condition. Concretely, if a right side key D**221** of the dropdown list D**22** is touch-operated, a plurality of candidate values (e.g. "full color", "gray scale", "monochrome" and others) settable as the color designating condition are displayed selectably. Subsequently, if any one of the displayed plurality of candidate values is selected, the selected candidate value is inputted into an input column D**222** of the color designating condition. Thereby, the color designating condition is set to the selected candidate value. For example, in a concrete example shown in FIG. **4**, the color designating condition is set to a condition of "full color".

Incidentally, just after the image obtaining instruction operation is carried out, when displaying the image output operation screen W**2** on the displaying part **91**, the remote operation device **9** inputs the color designating condition stored in the storage (not shown) of the remote operation device **9** into the input column D**222**. That is, at the beginning of displaying of the image output operation screen W**2**, the color designating condition is set to the preceding color designating condition stored in the storage (not shown).

Thus, the process condition setting operation is carried out by operation of the dropdown list D**21** and the dropdown list D**22**. Alternatively, the process condition setting operation is carried out by not changing (leaving alone) the preceding process condition peculiar to the remote operation device **9** stored in the storage (not shown) inputted in the input columns D**212** and D**222** at the beginning of displaying of the image output operation screen W**2** without operating the dropdown list D**21** and the dropdown list D**22**.

In the following, the process condition set in the process condition setting operation (in the concrete example, the concentration condition and the color designating condition) is so-called as a first process condition.

The applying key K**21** is arranged so as to be used for updating the preceding process condition stored in the storage (not shown). Concretely, if the applying key K**21** is depressed, the remote operation device **9** updates the preceding concentration adjustment condition and the preceding color designating condition stored in the storage (not shown) by the concentration adjustment condition inputted into the input column D**212** and the color designating condition inputted into the input column D**222**. Thus, in the storage (not shown) of the remote operation device **9**, the process condition peculiar to the remote operation device **9** is stored.

The executing key K**22** is arranged so as to be used for carrying out output execution operation. The output execution operation is operation transmitting output execution instruction to the controlling part **10** via the communicating part **26**. The output execution instruction is an instruction asking the multifunction peripheral **1** to process the output object image on the first process condition to create the processed image and asking the multifunction peripheral **1** to output the processed image as a first processed image.

That is, if the executing key K**22** is depressed, the remote operation device **9** transmits the output execution instruction containing the first process condition to the controlling part **10** via the communicating part **26**.

The cancel key K**23** is arranged, similarly to the cancel key K**12** of the image obtaining instruction screen W**1**, so as to be used for carrying out cancel operation. That is, if the cancel key K**23** is depressed, the remote operation device **9** does not display (hides) the image output operation screen W**2** and re-displays the image obtaining instruction screen W**1** on the displaying part **91**.

The preview key K**24** is arranged so as to be used for carrying out output-preceding preview operation. The output-preceding preview operation is operation transmitting an output-preceding preview execution instruction to the controlling part **10** via the communicating part **26**. The output-preceding preview execution instruction is an instruction asking the multifunction peripheral **1** to process the output object image on the first process condition to create the first processed image, and then, to reply an output-preceding preview display instruction containing the first processed image after processing. The output-preceding preview display instruction is an instruction asking the remote operation device **9** to display the first processed image contained in the output-preceding preview display instruction on the displaying part **91**.

That is, if the preview key K**24** is depressed, the remote operation device **9** transmits the output-preceding preview execution instruction containing the first process condition to the controlling part **10** via the communicating part **26**. As a result, when the output-preceding preview display instruction containing the first processed image is replied to the remote operation device **9**, the remote operation device **9** displays the first processed image on the displaying part **91**.

Incidentally, on the image output operation screen W**2**, a dropdown list (not shown) used for setting the output condition, such as the print condition and the transmission condition, is arranged. That is, similarly to the above-mentioned process condition setting operation, the output condition, such as the print condition and the transmission condition, is set by operation of the dropdown list. When depressing the executing key K**22**, the remote operation device **9** replies the above-mentioned output execution instruction with containing the output condition, such as the print condition and the

transmission condition, set by operation of the dropdown list to the controlling part **10** via the communicating part **26**.

With reference to FIG. **3**, a case where the image output operation screen W**2** is displayed on the displaying part **91** and the process condition setting operation is carried out by the remote user may be considered (step S**2**). Further, the output-preceding preview operation may be carried out by the remote user (step S**3**: YES).

In such a case, the display controlling part **13** obtains the output object image in accordance with the image obtaining instruction received when the image obtaining instruction operation is carried out at step S**1**. The display controlling part **13** obtains the first process condition contained in the output-preceding preview execution instruction received when the output-preceding preview operation is carried out at step S**3** (step S**4**).

At step S**4**, the display controlling part **13** obtains the output object image in accordance with the image obtaining instruction as follows. In a case where the received image obtaining instruction is the scanned image obtaining instruction, the display controlling part **13** makes the image reading part **21** read the image of the document to obtain the image represented by the image data created by the image reading part **21** as the output object image. On the other hands, in a case where the received image obtaining instruction is the transmitting image obtaining instruction, the display controlling part **13** obtains the image represented by the image data contained in the transmitting image obtaining instruction as the output object image.

Subsequently, the display controlling part **13** processes the output object image obtained at step S**4** on the first process condition obtained at step S**4** to create the first processed image (step S**5**).

Further, the display controlling part **13** replies the output-preceding preview display instruction containing the image data representing the first processed image created at step S**5** in accordance with the output-preceding preview execution instruction received when the output-preceding preview operation is carried out at step S**3** (step S**6**).

When the remote operation device **9** receives the output-preceding preview display instruction, the remote operation device **9** displays the first processed image represented by the image data contained in the output-preceding preview display instruction on the displaying part **91** so as to overlap the first processed image on the image output operation screen W**2**. Incidentally, the remote operation device **9** display a closing key used for not displaying (hiding) the first processed image when displaying the first processed image on the displaying part **91**.

Then, as a result of visually recognizing the first processed image displayed on the displaying part **91** by the remote user, the remote user may decide that the output object image is not processed intendedly and depresses the closing key displayed together with the first processed image (step S**7**: DEPRESS CLOSING KEY). In such a case, the action is returned to step S**2** and the process condition setting operation using the image output operation screen W**2** is carried out by the remote user.

On the other hand, as a result of visually recognizing the first processed image displayed on the displaying part **91** by the remote user, the remote user may decide that the output object image is not processed intendedly and depresses the cancel key K**23** to carry out the cancel operation (step S**7**: CANCEL OPERATION). In such a case, the remote operation device **9** does not display (hides) the image output operation screen W**2** and re-displays the image obtaining instruction screen W**1** on the displaying part **91**. That is, the action is returned to step S**1** and the image obtaining instruction operation is carried out by the remote user.

Further, as a result of visually recognizing the first processed image displayed on the displaying part **91** by the remote user, the remote user may decide that the output object image is processed intendedly and depresses the execution key K**22** to carry out the output execution operation (step S**7**: OUTPUT EXECUTION OPERATION). Alternatively, the remote user may not carry out the output-preceding preview operation onto the image output operation screen W**2** (step S**3**: NO) and may depress the execution key K**22** to carry out the output execution operation (step S**7**: OUTPUT EXECUTION OPERATION).

In these cases, the image outputting part **11** obtains, similarly to step S**4**, the output object image in accordance with the image obtaining instruction received when the image obtaining instruction operation is carried out at step S**1**. Moreover, the image outputting part **11** obtains the first process condition contained in the output execution instruction received when the output execution operation is carried out at step S**7** (step S**8**).

Subsequently, the image outputting part **11** processes the output object image obtained at step S**8** on the first process condition obtained at step S**8** to create the first processed image (step S**9**).

Further, the image outputting part **11** outputs the first processed image (step S**10**).

Concretely, a case where the name of the function stored in the RAM and touch-operated on the menu screen by the remote user indicates the printing function may be considered. In this case, at step S**10**, the image outputting part **11** obtains the print condition contained in the output execution instruction received when the output execution operation is carried out at step S**7**. Moreover, the image outputting part **11** controls the image forming part **22** to form the first processed image on the sheet by using the obtained print condition.

Alternatively, a case where the name of the function stored in the RAM indicates the transmitting function may be considered. In this case, at step S**10**, the image outputting part **11** obtains the transmission condition contained in the output execution instruction received when the output execution operation is carried out at step S**7**. Moreover, the image outputting part **11** creates the electronic file based on the image data representing the first processed image and transmits the electronic file to the destination designated by the obtained transmission condition.

When the first processed image is outputted by the image outputting part **11** (step S**10**), the storage controlling part **12** stores the output object image obtained by the image outputting part **11** at step S**8**, the first process condition obtained by the image outputting part **11** at step S**8** and an identification information of the remote operation device **9** in the first storing part **24** with associating with each other (step S**11**).

Incidentally, at step S**11**, the storage controlling part **12** creates an electronic file based on the image data representing the output object image and stores a file name (hereinafter, so-called as an output object image file name) of the electronic file (hereinafter, so-called as an output object image file) and the image data (binary data) representing the output object image of the electronic file in the first storing part **24** with associating with each other, thereby storing the output object image in the first storing part **24**.

That is, at step S**11**, the storage controlling part **12** stores the output object image file name, the image data (binary data) representing the output object image, the first process

condition and the identification information of the remote operation device **9** in the first storing part **24** with associating with each other.

The identification information of the remote operation device **9** is information identifying the remote operation device **9**, e.g. IP (Internet Protocol) address of transmission source of a data packet which is contained in the data packet indicating each instruction received from the remote operation device **9**.

A way of transmitting the identification information is not restricted by the above-mention. The remote operation device **9** may transmit each instruction with containing the identification information of the remote operation device **9**, such as a machine name or IP address of the remote operation device **9**, when outputting each instruction to the controlling part **10** via the communicating part **26**. In such a case, the storage controlling part **12** obtains the identification information contained in the output execution instruction received when the output execution operation is carried out at step S**7** and stores the obtained identification information in the first storing part **24** with containing with the output object image file name and others.

FIG. **5** is a table showing one example of information stored in the first storing part **24**. For example, the image obtaining instruction operation may be carried out in the remote operation device **9** having IP address of "xxx.xxx.xxx.xx1" (step S**1**) and the transmitting image obtaining instruction containing the image data represented by the electronic file having the electronic file name of "Image1.bmp" may be transmitted to the controlling part **10**. Moreover, after the process condition setting operation is carried out in the remote operation device **9** (step S**2**), the output execution operation is carried out (step S**7**: OUTPUT EXECUTION OPERATION) and the image obtaining instruction containing the first process condition of "thickening, full color" is transmitted to the controlling part **10**.

In such a case, at step S**11**, the storage controlling part **12** stores, as shown in FIG. **5**, the output object image file name of "Image1.bmp", the image data of the output object image represented by the output object image file having the output object image file name of "Image1.bmp", the first process condition of "thickening, full color" and IP address of "xxx.xxx.xxx.xx1" as the identification information of the remote operation device **9** in the first storing part **24** with associating with each other.

Next, an action of the multifunction peripheral **1** and the remote operation device **9** when image re-output operation is carried out in the remote operation device **9** will be described. The image re-output operation is operation making the multifunction peripheral **1** obtain the image data of the output object image associated with the output object image file name stored in the first storing part **24** and making the multifunction peripheral **1** process the output object image (hereinafter, so-called as a re-outputted image) represented by the image data on the first process condition stored in the first storing part **24** with being associated with the re-outputted image or on another process condition re-set by the remote operation device **9** to create the processed image and output the processed image. In this description, information stored in the second storing part **25** will be described in detail. FIGS. **6** and **7** are flowcharts useful for understanding the action of the multifunction peripheral **1** and the remote operation device **9** when image re-output operation is carried out by the remote operation device **9**.

As described above, when the remote user of the remote operation device **9** touch-operates the icon displayed on the displaying part **91** for starting application software remotely operating the multifunction peripheral **1**, the remote operation device **9** displays the menu screen on the displaying part **91**.

Subsequently, as shown in FIG. **6**, the remote user may depress the key indicating the name of the function re-outputting the image, such as a re-printing function and a re-transmitting function, displayed selectably on the menu screen (step S**21**).

In such a case, the remote operation device **9** transmits re-outputted image obtaining instruction containing the name of the function depressed at step S**21** to the controlling part **10** via the communicating part **26**. When the display controlling part **13** receives the re-outputted image obtaining instruction, the display controlling part **13** stores the name of the function contained in the display controlling part **13** in the RAM. Moreover, the display controlling part **13** obtains, as the identification information of the remote operation device **9**, IP address information of transmission source of a data packet which is contained in the data packet indicating the re-outputted image obtaining instruction. Further, the display controlling part **13** decides whether or not the remote operation device **9** identified by the obtained identification information belongs to the group (step S**22**).

Concretely, the display controlling part **13** executes decision of step S**22** by using information stored in the second storing part **25**. As described above, in the second storing part **25**, the identification information of the remote operation device **9** and the identification information of the group to which the remote operation device **9** belongs are stored with being associated with each other. FIG. **8** is a table showing one example of information stored in the second storing part **25**.

For example, as shown in FIG. **8**, the identification information of "xxx.xxx.xxx.xx1" of the remote operation device **9** and the identification information G**1** of the group to which the remote operation device **9** belongs are stored with being associated with each other. Moreover, the identification information of "xxx.xxx.xxx.xx2" of the remote operation device **9** and the identification information G**1** of the group to which the remote operation device **9** belongs are stored with being associated with each other. That is, two remote operation devices **9** identified by the identification information of "xxx.xxx.xxx.xx1" and the identification information of "xxx.xxx.xxx.xx2" belong to the group identified by the identification information G**1**.

Further, the identification information of "xxx.xxx.xxx.xx3" of the remote operation device **9** and the identification information G**2** of the group to which the remote operation device **9** belongs are stored with being associated with each other. That is, the remote operation device **9** identified by the identification information of "xxx.xxx.xxx.xx3" belongs to another group identified by the identification information G**2** different the group to which two remote operation devices **9** identified by the identification information of "xxx.xxx.xxx.xx1" and the identification information of "xxx.xxx.xxx.xx2" belong (the group identified by the identification information G**1**).

Incidentally, for example, the identification information of "xxx.xxx.xxx.xx4" of the remote operation device **9** is not stored in the second storing part **25**. That is, the remote operation device **9** identified by the identification information of "xxx.xxx.xxx.xx4" does not belong to any group.

That is, the display controlling part **13** confirms at step S**22** whether or not the obtained identification information the remote operation device **9** is stored in the second storing part **25** and, according to the confirmed result, decides whether or

not the remote operation device **9** identified by the obtained identification information belongs to any group.

If the display controlling part **13** decides at step S**22** that the remote operation device **9** belongs to the group (step S**22**: YES), the display controlling part **13** confirms one or more remote operation device(s) **9** belonging to the same group as the group to which the remote operation device **9** belong and obtains the output object image file name(s) associated with the identification information of the confirmed remote operation device(s) **9** and stored in the first storing part **24**. Subsequently, the display controlling part **13** replies a selection screen display instruction with containing the obtained output object image file name(s) to the remote operation device **9** (step S**23**).

The selection screen display instruction is an instruction asking the remote operation device **9** to display re-outputted image selection screen displaying selectably the output object image file name contained in the selection screen display instruction on the displaying part **91**. That is, when step S**23** is executed, the remote operation device **9** displays the re-outputted image selection screen displaying selectably the output object image file name contained in the received selection screen display instruction on the displaying part **91**.

On the other hand, the display controlling part **13** decides at step S**22** that the remote operation device **9** does not belong to any group (step S**22**: NO), the display controlling part **13** obtains the output object image file name associated with the identification information of the remote operation device **9** and stored in the first storing part **24**. Subsequently, the display controlling part **13** replies the selection screen display instruction with containing the obtained output object image file name to the remote operation device **9** (step S**24**).

That is, when step S**24** is executed, the remote operation device **9** displays the re-outputted image selection screen displaying selectably the output object image file name contained in the received selection screen display instruction on the displaying part **91**.

In the following, a concrete example of step S**22**, step S**23** and step S**24** will be described. For example, the identification information of the subject remote operation device **9** obtained at step S**22** by the display controlling part **13** may be the identification information of "xxx.xxx.xxx.xx1" (refer to FIG. **8**) of the remote operation device **9** stored in the second storing part **25**. Moreover, in the first storing part **24**, information as shown in FIG. **5** may be stored.

In such a case, at step S**22**, because the obtained identification information of "xxx.xxx.xxx.xx1" of the subject remote operation device **9** is stored in the second storing part **25**, the display controlling part **13** decides that the subject remote operation device **9** belongs to the group (step S**22**: YES).

In such a case, at step **23**, the display controlling part **13** confirms the group G**1** to which the subject remote operation device **9** belong and obtains the identification information of "xxx.xxx.xxx.xx1" and "xxx.xxx.xxx.xx2" (refer to FIG. **8**) of two remote operation devices **9** associated with the identification information G**1** of the confirmed group and stored in the second storing part **25**. Thus, the display controlling part **13** obtains the identification information of two remote operation devices **9** belonging to the group to which the subject remote operation device **9** belongs.

the display controlling part **13** obtains two output object image file names of "Image1.bmp" and "Image2.bmp" (refer to FIG. **5**) associated with the obtained identification information of two remote operation devices **9** and stored in the first storing part **24**. Subsequently, the display controlling part **13** replies the selection screen display instruction with containing two obtained output object image file names of "Image1.bmp" and "Image2.bmp" to the remote operation device **9**.

FIG. **9** is a plan view showing one example of the re-outputted image selection screen W**3**. When step S**23** is executed, the remote operation device **9** displays, as shown in FIG. **9**, the re-outputted image selection screen W**3** displaying selectably two output object image file names of "Image1.bmp" and "Image2.bmp" contained in the received selection screen display instruction on the displaying part **91**. Incidentally, the re-outputted image selection screen W**3** will be described in detail.

On the other hand, the identification information of the subject remote operation device **9** obtained at step S**22** by the display controlling part **13** may be the identification information of "xxx.xxx.xxx.xx4" not stored in the second storing part **25**. Moreover, in the first storing part **24**, information as shown in FIG. **5** may be stored.

In such a case, at step S**22**, because the obtained identification information of "xxx.xxx.xxx.xx4" of the subject remote operation device **9** is not stored in the second storing part **25**, the display controlling part **13** decides that the subject remote operation device **9** does not belong to the group (step S**22**: NO).

Further, at step S**24**, the display controlling part **13** obtains the output object image file name of "Image4.bmp" (refer to FIG. **5**) associated with the identification information of the remote operation device **9** obtained at step S**22** and stored in the first storing part **24**. Subsequently, the display controlling part **13** replies the selection screen display instruction with containing the obtained output object image file name of "Image4.bmp" to the remote operation device **9**.

As a result, the remote operation device **9** displays, similarly to the re-outputted image selection screen W**3** as shown in FIG. **9**, the re-outputted image selection screen displaying selectably the output object image file name of "Image4.bmp" contained in the received selection screen display instruction on the displaying part **91**.

With reference to FIG. **6**, the remote user may carry out re-outputted image obtaining instruction operation by using the re-outputted image selection screen displayed on the displaying part **91** after step S**23** and step S**24** are executed (step S**25**).

The re-outputted image obtaining instruction operation is operation selecting the output object image file name corresponding to the output object image to be re-outputted to the multifunction peripheral **1** out of one or more output object image file name(s) displayed on the re-outputted image selection screen and transmitting the re-outputted image obtaining instruction asking the multifunction peripheral **1** to obtain the output object image corresponding to the selected output object image file name to the controlling part **10** via the communicating part **26**.

In the following, the re-outputted image obtaining instruction operation at step S**25** will be described in detail by using the above-mentioned re-outputted image selection screen W**3** (refer to FIG. **9**).

As shown in FIG. **9**, on the re-outputted image selection screen W**3**, two radio buttons R**31** and R**32**, file name indication columns (text labels) F**1** and F**2** indicating two output object image file names contained in the selection screen display instruction, an OK key K**31** and a cancel Key K**32** are arranged.

Two radio buttons R**31** and R**32** are arranged so that any one of the buttons is selectable. The radio button R**31** is arranged so as to be used for selecting the output object image file name of "Image1.bmp" displayed on the file name indi-

cation column F1 adjacent to the radio button R31. Similarly, the radio button R32 is arranged so as to be used for selecting the output object image file name of "Image2.bmp" displayed on the file name indication column F2 adjacent to the radio button R32.

The OK key K31 is arranged so as to be used for carrying out operation transmitting the re-outputted image obtaining instruction asking the multifunction peripheral 1 to obtain the output object image corresponding to the output object image file name selected by operating the radio button R31 and the radio button R32 to the controlling part 10 via the communicating part 26.

For example, by touch operation of the remote user, the radio button R31 may be selected, and then, the OK key K31 may be depressed. In such a case, the remote operation device 9 transmits the re-outputted image obtaining instruction asking the multifunction peripheral 1 to obtain the output object image corresponding to the output object image file name of "Image1.bmp" indicated on the file name indication column F1 to the controlling part 10 via the communicating part 26.

The cancel key K32 is arranged, similarly to the cancel key K12 on the image obtaining instruction screen W1, so as to be used for carrying out cancel operation. That is, when the cancel key K32 is depressed, the remote operation device 9 does not display (hides) the re-outputted image selection screen W3 and re-displays the menu screen on the displaying part 91.

Thus, the re-outputted image obtaining instruction operation is carried out by operation depressing the OK Key K31 after selecting the radio button R31 or operation depressing the OK Key K31 after selecting the radio button R32.

With reference to FIG. 6, when the re-outputted image obtaining instruction operation using the re-outputted image selection screen W3 is carried out by the remote user (step S25), the remote operation device 9 displays an image re-output operation screen on the displaying part 91 after transmitting the re-outputted image obtaining instruction.

The image re-output operation screen is configured so as to be capable of process condition forced setting operation and process condition re-setting operation. The process condition forced setting operation is operation storing process condition forced setting information in the storage (not shown) in the remote operation device 9. The process condition forced setting information is information forcedly setting a process condition when making the multifunction peripheral 1 re-output the re-outputted image as the first process condition stored in the first storing part 24 with being associated with the re-outputted image. The process condition re-setting operation is operation re-setting the process condition when making the multifunction peripheral 1 output the re-outputted image.

Incidentally, in the following description, in order to simplify the description, a case where the process condition contains two conditions of the concentration adjustment condition and the color designation condition may be considered.

FIG. 10 is a plan view showing one example of the image re-output operation screen W4. For example, as shown in FIG. 10, in the image re-output operation screen W4, two radio buttons R41 and R42, two dropdown lists D41 and D42, an applying key K41, an executing key K42, a cancel key K43 and a preview key K44 are arranged.

Two radio buttons R41 and R42 are arranged so that any one of the buttons is selectable. The radio button R41 is arranged so as to disable operation of two dropdown lists D41 and D42 and the applying key K41 by the remote user and to be used for carrying out the above-mentioned process condition forced setting operation.

That is, when the remote user selects the radio button R41, operation of two dropdown lists D41 and D42 and the applying key K41 is disabled. Moreover, when the remote user selects the radio button R41, the above-mentioned process condition forced setting operation is carried out and the process condition forced setting information is stored in the storage (not shown) in the remote operation device 9.

The radio button R42 is arranged so as to enable operation of two dropdown lists D41 and D42 and the applying key K41 by the remote user and to delete the process condition forced setting information stored in the storage (not shown). That is, when the remote user selects the radio button R42, operation of two dropdown lists D41 and D42 and the applying key K41 is enabled. Moreover, when the remote user selects the radio button R42, the remote operation device 9 deletes the process condition forced setting information stored in the storage (not shown).

The dropdown list D41 is arranged, similarly to the dropdown list D21 on the image output operation screen W2, so as to be used for re-setting the concentration adjustment condition when outputting the re-outputted image. Concretely, if a right side key D411 of the dropdown list D41 is touch-operated, a plurality of candidate values (e.g. "thickening", "normal", "thinning" and others) settable as the concentration adjustment condition are displayed selectably. Subsequently, if any one of the displayed plurality of candidate values is selected, the selected candidate value is inputted into an input column D412. Thereby, the concentration adjustment condition when outputting the re-outputted image is re-set to the selected candidate value. For example, in a concrete example shown in FIG. 10, the concentration adjustment condition is re-set to a condition of "thinning".

Incidentally, just after re-outputted image obtaining operation is carried out (step S25), when displaying the image re-output operation screen W4 on the displaying part 91, if the radio button R42 is firstly selected, the remote operation device 9 inputs the concentration adjustment condition stored in the storage (not shown) of the remote operation device 9 into the input column D412. That is, at the beginning of displaying of the image re-output operation screen W4, if the radio button R42 is firstly selected, the concentration adjustment condition is re-set to the preceding concentration adjustment condition stored in the storage (not shown).

The dropdown list D42 is arranged, similarly to the dropdown list D22 on the image output operation screen W2, so as to be used for re-setting the color designating condition when outputting the re-outputted image. Concretely, if a right side key D421 of the dropdown list D42 is touch-operated, a plurality of candidate values (e.g. "full color", "gray scale", "monochrome" and others) settable as the color designating condition are displayed selectably. Subsequently, if any one of the displayed plurality of candidate values is selected, the selected candidate value is inputted into an input column D422 of the color designating condition. Thereby, the color designating condition when outputting the re-outputted image is re-set to the selected candidate value. For example, in a concrete example shown in FIG. 10, the color designating condition is re-set to a condition of "monochrome".

Incidentally, just after the re-outputted image obtaining operation is carried out (step S25), when displaying the image re-output operation screen W4 on the displaying part 91, if the radio button R42 is firstly selected, the remote operation device 9 inputs the color designating condition stored in the storage (not shown) of the remote operation device 9 into the input column D422. That is, at the beginning of displaying of the image re-output operation screen W4, if the radio button

R42 is firstly selected, the color designating condition is re-set to the preceding color designating condition stored in the storage (not shown).

Thus, the process condition re-setting operation is carried out by selection of the radio button R42 and operation of the dropdown list D41 and the dropdown list D42. Alternatively, the process condition re-setting operation is carried out by firstly selecting the radio button R42 and by not changing (leaving alone) the preceding process condition peculiar to the remote operation device 9 stored in the storage (not shown) of the remote operation device 9 inputted in the input columns D412 and D422 at the beginning of displaying of the image re-output operation screen W4 without operating the dropdown list D41 and the dropdown list D42.

In the following, the process condition set in the process condition re-setting operation (in the concrete example, the concentration condition and the color designating condition) is so-called as a second process condition.

The applying key K41 is arranged, similarly to the applying key K21 on the image output operation screen W2, so as to be used for updating the preceding process condition stored in the storage (not shown). Concretely, if the applying key K41 is depressed, the remote operation device 9 updates the preceding concentration adjustment condition and the preceding color designating condition stored in the storage (not shown) by the concentration adjustment condition inputted into the input column D412 and the color designating condition inputted into the input column D422. Thus, in the storage (not shown) of the remote operation device 9, the process condition peculiar to the remote operation device 9 is stored.

The executing key K42 is arranged so as to be used for carrying out re-output execution operation. The re-output execution operation is operation transmitting re-output execution instruction to the controlling part 10 via the communicating part 26. The re-output execution instruction is an instruction asking the multifunction peripheral 1 to process the re-outputted image on the first process condition stored in the storing part 24 with being associated with the re-outputted image or to process the re-outputted image on the second process condition set by the process condition re-setting operation to create the processed image and asking the multifunction peripheral 1 to output the processed image as a second processed image.

Concretely, after the process condition forced setting operation is carried out to select the radio button R41, if the executing key K42 is depressed, the remote operation device 9 transmits the re-output execution instruction containing the process condition forced setting information stored in the storage (not shown) to the controlling part 10 via the communicating part 26. On the other hand, after the process condition re-setting operation is carried out, if the executing key K42 is depressed, the remote operation device 9 transmits the re-output execution instruction containing the second process condition set by the process condition re-setting operation to the controlling part 10 via the communicating part 26.

The cancel key K43 is arranged, similarly to the cancel key K12 of the image obtaining instruction screen W1, so as to be used for carrying out cancel operation. That is, if the cancel key K43 is depressed, the remote operation device 9 does not display (hides) the image re-output operation screen W4 and re-displays the re-outputted image selection screen W3 on the displaying part 91.

The preview key K44 is arranged so as to be used for carrying out output-following preview operation (preview operation). The output-following preview operation is operation transmitting an output-following preview execution instruction to the controlling part 10 via the communicating part 26. The output-following preview execution instruction is an instruction asking the multifunction peripheral 1 to process the re-outputted image on the first process condition stored in the storing part 24 with being associated with the re-outputted image or to process the re-outputted image on the second process condition to create the processed image and asking the multifunction peripheral 1 to reply an output-following preview display instruction containing the processed image as a second processed image. The output-following preview display instruction is an instruction asking the remote operation device 9 to display the second processed image contained in the output-following preview display instruction on the displaying part 91.

That is, after the process condition forced setting operation is carried out to select the radio button R41, if the preview key K44 is depressed, the remote operation device 9 transmits the output-following preview execution instruction containing the process condition forced setting information stored in the storage (not shown) to the controlling part 10 via the communicating part 26. On the other hand, after the process condition re-setting operation is carried out, if the preview key K44 is depressed, the remote operation device 9 transmits the output-following preview execution instruction containing the second process condition set by the process condition re-setting operation to the controlling part 10 via the communicating part 26. As a result, when the output-following preview display instruction containing the second processed image is replied to the remote operation device 9, the remote operation device 9 displays the second processed image on the displaying part 91.

Incidentally, on the image re-output operation screen W4, a dropdown list (not shown) used for re-setting the output condition, such as the print condition and the transmission condition, when outputting the re-outputted image is arranged. The dropdown list is configured so as to be operatable while the radio button R41 is selected. That is, the output condition, such as the print condition and the transmission condition, is re-set by operation of the dropdown list. When depressing the executing key K42, the remote operation device 9 replies the above-mentioned re-output execution instruction with containing the output condition, such as the print condition and the transmission condition, set by operation of the dropdown list to the controlling part 10 via the communicating part 26.

With reference to FIG. 6, a case where the image re-output operation screen W4 is displayed on the displaying part 91 and the process condition forced setting operation or the process condition re-setting operation is carried out by the remote user may be considered (step S26). Further, the output-following preview operation may be carried out by the remote user (step S27: YES).

In such a case, the display controlling part 13 decides whether or not the process condition forced setting information is contained in the output-following preview execution instruction received when the output-following preview operation is carried out at step S27 (step S28).

If the display controlling part 13 decides that the process condition forced setting information is not contained in the output-following preview execution instruction (step S28: NO), the display controlling part 13 obtains the re-outputted image in accordance with the re-outputted image obtaining instruction received when the re-outputted image obtaining instruction operation is carried out at step S25. Concretely, the display controlling part 13 obtains the image data of the output object image stored in the first storing part 24 with being associated with the output object image file name (e.g. "Image1.bmp") indicated by the re-outputted image obtain-

ing instruction and obtains the image presented by the obtained image data as the re-outputted image. Moreover, the display controlling part **13** obtains the second process condition contained in the output-following preview execution instruction received when the output-following preview operation is carried out at step S**27** (step S**29**).

On the other hand, if the display controlling part **13** decides that the process condition forced setting information is contained in the output-following preview execution instruction (step S**28**: YES), similarly to step S**29**, the display controlling part **13** obtains the re-outputted image in accordance with the re-outputted image obtaining instruction received when the re-outputted image obtaining instruction operation is carried out at step S**25**. Moreover, the display controlling part **13** obtains the first process condition (e.g. "thickening, full color") stored in the first storing part **24** with being associated with the output object image file name (e.g. "Image1.bmp") indicated by the re-outputted image obtaining instruction (step S**32**).

Subsequently, the display controlling part **13** processes the re-outputted image obtained at step S**29** on the second process condition obtained at step S**29** to create the processed image as the second processed image. Alternatively, the display controlling part **13** processes the re-outputted image obtained at step S**32** on the first process condition obtained at step S**32** to create the processed image as the second processed image (step S**30**).

Further, the display controlling part **13** replies the output-following preview display instruction containing the image data representing the second processed image created at step S**30** in accordance with the output-following preview execution instruction received when the output-following preview operation is carried out at step S**27** (step S**31**).

When the remote operation device **9** receives the output-following preview display instruction, the remote operation device **9** displays the second processed image represented by the image data contained in the output-following preview display instruction on the displaying part **91** so as to overlap the second processed image on the image re-output operation screen W**4**. Incidentally, the remote operation device **9** display a closing key used for not displaying (hiding) the second processed image when displaying the second processed image on the displaying part **91**.

Then, as a result of visually recognizing the second processed image displayed on the displaying part **91** by the remote user, the remote user may decide that a re-output image is not processed intendedly and may depress the closing key displayed together with the second processed image (step S**33**: DEPRESS CLOSING KEY). In such a case, the action is returned to step S**26** and the process condition forced setting operation or the process condition re-setting operation using the image re-output operation screen W**4** is carried out by the remote user.

On the other hand, as a result of visually recognizing the second processed image displayed on the displaying part **91** by the remote user, the remote user may decide that the re-output image is not processed intendedly and may depress the cancel key K**43** to carry out the cancel operation (step S**33**: CANCEL OPERATION). In such a case, the remote operation device **9** does not display (hides) the image re-output operation screen W**4** and re-displays the re-outputted image selection screen W**3** on the displaying part **91**. That is, the action is returned to step S**25** and the re-outputted image obtaining instruction operation using the re-outputted image selection screen W**3** is carried out by the remote user.

Further, as a result of visually recognizing the second processed image displayed on the displaying part **91** by the remote user, the remote user may decide that the re-outputted image is processed intendedly and may depress the execution key K**42** to carry out the re-output execution operation (step S**33**: RE-OUTPUT EXECUTION OPERATION). Alternatively, the remote user may not carry out the output-following preview operation onto the image re-output operation screen W**4** (step S**27**: NO) and may depress the execution key K**42** to carry out the re-output execution operation (step S**33**: RE-OUTPUT EXECUTION OPERATION).

In these cases, as shown in FIG. **7**, the image outputting part **11** decides, similarly to step S**28**, whether or not the process condition forced setting information is contained in the re-output execution instruction received when the re-output execution operation is carried out at step S**33** (step S**41**).

If the image outputting part **11** decides that the process condition forced setting information is not contained in the re-output execution instruction (step S**41**: NO), similarly to step S**29**, the image outputting part **11** obtains the re-outputted image in accordance with the re-outputted image obtaining instruction received when the re-outputted image obtaining instruction operation is carried out at step S**25**. Moreover, the image outputting part **11** obtains the second process condition contained in the re-output execution instruction received when the re-output execution operation is carried out at step S**33** (step S**42**).

On the other hand, if the image outputting part **11** decides that the process condition forced setting information is contained in the re-output execution instruction (step S**41**: YES), similarly to step S**29**, the image outputting part **11** obtains the re-outputted image in accordance with the re-outputted image obtaining instruction received when the re-outputted image obtaining instruction operation is carried out at step S**25**. Moreover, the image outputting part **11** obtains the first process condition (e.g. "thickening, full color") stored in the first storing part **24** with being associated with the output object image file name (e.g. "Image1.bmp") indicated by the re-outputted image obtaining instruction (step S**45**).

Subsequently, the image outputting part **11** processes the re-outputted image obtained at step S**42** on the second process condition obtained at step S**42** to create the processed image as the second processed image. Alternatively, the image outputting part **11** processes the re-outputted image obtained at step S**45** on the first process condition obtained at step S**45** to create the processed image as the second processed image (step S**43**).

Further, the image outputting part **11** outputs the second processed image (step S**44**).

Concretely, a case where the name of the function stored in the RAM and touch-operated on the menu screen by the remote user indicates the re-printing function may be considered. In this case, at step S**44**, the image outputting part **11** obtains the print condition contained in the re-output execution instruction received when the re-output execution operation is carried out at step S**33**. Moreover, the image outputting part **11** controls the image forming part **22** to form the second processed image on the sheet by using the obtained print condition.

Alternatively, a case where the name of the function stored in the RAM indicates the re-transmitting function may be considered. In this case, at step S**44**, the image outputting part **11** obtains the transmission condition contained in the re-output execution instruction received when the re-output execution operation is carried out at step S**33**. Moreover, the image outputting part **11** creates the electronic file based on the image data representing the second processed image and

transmits the electronic file to the destination designated by the obtained transmission condition.

That is, when a first remote operation device **9** out of the plurality of remote operation devices **9** carries out an image output operation making the multifunction peripheral **1** process the output object image obtained in the multifunction peripheral **1** on the first process condition set by the first remote operation device **9** to create the processed image as the first processed image and output the first processed image (step S**1**, step S**2** and step S**7**: OUTPUT EXECUTION OPERATION), the storage controlling part **12** stores the output object image in the first storing part **24** with associating with the first process condition (step S**8** and step S**11**).

When a second remote operation device **9** out of the plurality of remote operation devices **9** carries out the output-following preview operation displaying the output object image stored in the first storing part **24** (steps S**21**-S**26** and step S**27**: YES), the display controlling part **13** processes the output object image on the second process condition set peculiar to the second remote operation device **9** to create the second processed image and makes the second remote operation device **9** display the second processed image on the displaying part **91** (step S**28**: NO, and steps S**29**-S**31**).

Therefore, the user of the second remote operation device **9** can visually recognize the second processed image processed on the second process condition set peculiar to the second remote operation device **9** different from the first process condition set by the first remote operation device **9**. Thereby, the user of the second remote operation device **9** can set intendedly the second process condition in the second remote operation device **9** used by the user himself or herself, and accordingly, can re-process and re-use intendedly the first processed image outputted from the multifunction peripheral **1** by the user of the first remote operation device **9**.

Thus, in accordance with the configuration of the embodiment, it is possible to re-process the first processed image outputted from the multifunction peripheral **1** by the first remote operation device **9** on the second process condition set by the second remote operation device **9** to create the second processed image and to re-use the second processed image in the second remote operation device **9**.

Moreover, the display controlling part **13** allows the second remote operation device **9** to display the second processed image when the identification information of the second remote operation device **9** is stored in the second storing part **25** with being associated with the same group as the first remote operation device **9** carried out the image output operation processing the output object image on the first process condition to create the first processed image and outputting the first processed image from the multifunction peripheral **1** (step S**22**: YES, step S**23**, step S**25**, step S**26**, step S**27**: YES, and steps S**28**-S**31**).

Therefore, it is possible to reduce a possibility that the second processed image created by re-processing the first processed image outputted the first remote operation device **9** is visually recognized in another remote operation device **9** belonging to another group different from the first remote operation device **9** and in another remote operation device **9** not belonging to any group. Thereby, it is possible to reduce a possibility that information acquired by visually recognizing the first processed image is leaked to another user of another remote operation device **9** belonging to another group and another user of another remote operation device **9** not belonging to any group.

Further, the displaying controlling part **13** processes the re-outputted image on the first process condition stored in the first storing part **24** with being associated with the re-outputted image to create the second processed image and makes the second remote operation device **9** display the second processed image on the displaying part **91** (step S**32**, step S**30** and step S**31**), in a case where the process condition forced setting operation is carried out and the output-following preview operation is carried out in the second remote operation device **9**, i.e. in a case where the output-following preview operation displaying the re-outputted image without using the second process condition is carried out (step S**27**:YES and step S**28**:YES).

Therefore, the user of the second remote operation device **9** can visually recognize, by carrying out the process condition forced setting operation and the output-following preview operation, the same image as the first processed image without consuming time and labor making the second remote operation device **9** re-set the same process condition as the first process condition set the first remote operation device **9**.

Furthermore, the image outputting part **11** outputs the second processed image (steps S**41**-S**45**), in a case where the output-following preview operation is carried out and the re-output execution operation making the multifunction peripheral **1** re-output the second processed image displayed on the displaying part **91** by the display controlling part **13** is carried out (steps S**21**-S**32** step S**33**: RE-OUTPUT EXECUTION OPERATION).

Therefore, the user of the second remote operation device **9** can make, by carrying out the re-output execution operation when visually recognizing the second processed image and deciding that intended process is completed, the multifunction peripheral **1** output the second processed image processed intendedly.

Incidentally, the above-described embodiment is an example of an embodiment according to the present disclosure, but does not restrict the disclosure to the above-described embodiment. For example, the disclosure may be actualized in improved embodiments mentioned later.

For example, in one improved embodiment, the image re-output operation screen W**4** may be configured without arranging the execution key K**42** and the re-output execution operation may not be carried out in the remote operation device **9**. According to this, steps S**41**-S**45** may be omitted.

In another improved embodiment, the image re-output operation screen W**4** may be configured without arranging the radio button R**41** and the process condition forced setting operation may not be carried out in the remote operation device **9**. According to this, step S**28**, step S**32**, step S**41** and step S**45** may be omitted.

In a further improved embodiment, the display controlling part **13** may make all the remote operation device **9** preview the output object image stored in the first storing part **24**. That is, the multifunction peripheral **1** may be simplified without arranging the second storing part **25**. Moreover, the display controlling part **13** may reply the selection screen display instruction containing all the output object image file names stored in the first storing part **24** in place of steps S**22**-S**24**, in a case where the key indicating the name of the function re-outputting the image displayed selectably on the menu screen is depressed (step S**21**).

While the present disclosure has been described with reference to the preferable embodiment of the image forming apparatus of the disclosure and the description has technical preferable illustration, the disclosure is not to be restricted by the embodiment and illustration. Components in the embodiment of the present disclosure may be suitably changed or modified, or variously combined with other components. The claims are not restricted by the description of the embodiment.

What is claimed is:

1. An image processing apparatus operated by a plurality of remote operation devices, comprising:

a first storing part;

a controlling part; and

a second storing part,

wherein the controlling part works as:

a storage controlling part, when an image output operation with respect to an output object image is carried out in a first remote operation device out of the plurality of remote operation devices and the first remote operation device responds to the image output operation by instructing the image processing apparatus to obtain an output object image, to set a first process condition, to process the output object image on the basis of the first process condition to create a first processed image and to output the first processed image to the first remote operation device, associating the output object image with the first process condition and storing the output object image in the first storing part; and

a display controlling part, when a preview operation with respect to the output object image stored in the first storing part is carried out in a second remote operation device out of the plurality of remote operation devices and the second remote operation device responds to the preview operation by transmitting a preview execution instruction with respect to the output object image to the image processing apparatus and setting a second process condition peculiar to the second remote operation device, processing the output object image on the basis of the second process condition to create a second processed image and instructing the second remote operation device to display the second processed image on a displaying part of the second remote operation device,

the second storing part stores identification information of the second remote operation device and identification information of the group to which the second remote operation device with associating with each other,

the display controlling part allows the second remote operation device to display the second processed image when the identification information of the second remote operation device is stored in the second storing part with being associated with the same group as the first remote operation device.

2. The image processing apparatus according to claim 1, wherein

the controlling part works as:

an image outputting part, in a case where the preview operation is carried out and a re-output execution operation making the image processing apparatus output the second processed image displayed on the displaying part by the display controlling part is carried out, outputting the second processed image.

3. An image processing apparatus operated by a plurality of remote operation devices, comprising:

a first storing part; and

a controlling part,

wherein the controlling part works as:

a storage controlling part, when an image output operation with respect to an output object image is carried out in a first remote operation device out of the plurality of remote operation devices and the first remote operation device responds to the image output operation by instructing the image processing apparatus to obtain an output object image, to set a first process condition, to process the output object image on the basis of the first process condition to create a first processed image and to output the first processed image to the first remote operation device, associating the output object image with the first process condition and storing the output object image in the first storing part; and

a display controlling part, when a preview operation with respect to the output object image stored in the first storing part is carried out in a second remote operation device out of the plurality of remote operation devices and the second remote operation device responds to the preview operation by transmitting a preview execution instruction with respect to the output object image to the image processing apparatus and setting a second process condition peculiar to the second remote operation device, processing the output object image on the basis of the second process condition to create a second processed image and instructing the second remote operation device to display the second processed image on a displaying part of the second remote operation device,

the displaying controlling part processes the output object image on the first process condition stored in the first storing part with being associated with the output object image to create the second processed image and makes the second remote operation device display the second processed image on the displaying part, in a case where the preview operation displaying the output object image without using the second process condition is carried out.

4. The image processing apparatus according to claim 3, wherein

the controlling part works as:

an image outputting part, in a case where the preview operation is carried out and a re-output execution operation making the image processing apparatus output the second processed image displayed on the displaying part by the display controlling part is carried out, outputting the second processed image.

5. A remote operation system comprising:

a plurality of remote operation devices; and

an image processing apparatus operated by the remote operation device,

wherein the image processing apparatus includes:

a first storing part; and

a controlling part,

the controlling part works as:

a storage controlling part, when an image output operation with respect to an output object image is carried out in a first remote operation device out of the plurality of remote operation devices and the first remote operation device responds to the image output operation by instructing the image processing apparatus to obtain an output object image, to set a first process condition, to process the output object image on the basis of the first process condition to create a first processed image and to output the first processed image to the first remote operation device, associating the output object image with the first process condition and storing the output object image in the first storing part; and

a display controlling part, when a preview operation with respect to the output object image stored in the first storing part is carried out in a second remote operation device out of the plurality of remote operation devices and the second remote operation device responds to the preview operation by transmitting a preview execution instruction with respect to the output object image to the image processing apparatus and setting a second process condition peculiar to the second remote operation device, processing the output object image on the second

process condition to create a second processed image and instructing the second remote operation device to display the second processed image on a displaying part of the second remote operation device,

the displaying controlling part processes the output object image on the first process condition stored in the first storing part with being associated with the output object image to create the second processed image and makes the second remote operation device display the second processed image on the displaying part, in a case where the preview operation displaying the output object image without using the second process condition is carried out.

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